

Flashlight Energy Trail

Trace how energy changes in an LED flashlight system.

5.8.A “investigate and describe the transformation of energy in systems such as energy in a flashlight battery that changes from chemical energy to electrical energy to light energy;”

NAME _____

DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Circle every named form of energy. Then draw arrows between the circled energy forms that change into other forms, following the path described in the text.

A Light for the Walk

- ① During a night walk, Maya clicks on an LED flashlight. Inside, a battery stores chemical energy. A closed path lets that stored energy change into electrical energy as electric current moves through the flashlight's parts. The switch does not create energy. It simply closes or opens the path for the current. When the light is off, the battery still holds chemical energy.
- ② At the LED, electrical energy changes into light energy that helps Maya see the path. The LED also changes some electrical energy into thermal energy, or heat. An LED is designed to produce much more light and less heat than an old-style incandescent bulb. Even so, its surface may become a little warm after it has been on for a while.
- ③ The flashlight changes energy in a sequence, but it does not make energy from nothing. Chemical energy in the battery becomes electrical energy before the LED receives it. Then the electrical energy has two results at the LED: useful light and thermal energy. If the battery runs down, it has less stored chemical energy available, so the flashlight eventually grows dim or stops.

2 ANSWER WITH EVIDENCE Use the passage

1 What form of energy is stored in the battery before Maya turns on the flashlight?

2 What energy transformation happens as energy moves from the battery through the flashlight's parts?

3 Name the two forms of energy produced at the LED.

4 Why can the flashlight grow dim or stop when the battery runs down?

3 YOUR TURN Your own words

Choose a battery-powered device that is not a flashlight. In the three panels, show its energy changes from the battery to its final energy forms. Label each energy form and use arrows to show the changes.

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PART 1 • READ AND MARK

Circle every named form of energy. Then draw arrows between the circled energy forms that change into other forms, following the path described in the text. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	What form of energy is stored in the battery before Maya turns on the flashlight?	Chemical energy.
2	What energy transformation happens as energy moves from the battery through the flashlight's parts?	Chemical energy changes into electrical energy.
3	Name the two forms of energy produced at the LED.	Light energy and thermal energy, or heat.
4	Why can the flashlight grow dim or stop when the battery runs down?	The battery has less stored chemical energy available.

PART 3 • YOUR TURN (SAMPLE ANSWER)

Panel 1: A toy car battery labeled chemical energy. Panel 2: Wires and a motor labeled electrical energy. Panel 3: Turning wheels labeled kinetic energy, with sound energy and thermal energy also labeled.

Accept any accurate battery-powered system that begins with chemical energy in a battery, changes to electrical energy, and shows appropriate output energy forms. Accept "heat" for thermal energy and "motion" for kinetic energy.